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FEBRUARY 19, 1990

CHEMICAL & ENGINEERING

NEWS

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CHEMICAL EARNINGS

Poor fourth quarter wipes out gains for 1989

Page 10

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CHEMICAL & ENGINEERING NEWS

Volume 68, Number 8
CENEAR 68 (8) 1–56
ISSN 0009-2347

FEBRUARY 19, 1990

News of the Week

■ **In its biennial report, the National Science Board identifies weaknesses that raise serious questions about future health of U.S. science and engineering.** Page 4

■ **A bilateral agreement paving the way for destruction of chemical weapons is almost sure to be signed by the U.S. and the U.S.S.R. this June.** Page 5

■ **The benzene contamination that prompted the current recall of Perrier sparkling water was discovered by a U.S. lab that had been using it as a source of highly pure water.** Page 5

■ **China expects its current austerity program and startup of new plants will help ease the domestic shortage of chemicals this year.** Page 6

■ **University of California has sued Lilly for infringing a UC patent on genetically engineered human insulin.** Page 6

Business

Takeda U.S.A. has started up a vitamin C plant in Wilmington, N.C., one of the largest Japanese investments in the U.S. **Page 14**

Government

OSHA's new laboratory safety regulations stress employee training, development of chemical handling plans specific for chemicals used in individual labs. **Page 16**

Pesticide export policies would be modified, expanded under EPA proposal. **Page 17**

Regulatory agencies receive increased funding in Bush's proposed 1991 budget. **Page 18**

Science/Technology

New techniques that use readily available data to develop quantitative structure-activity relationships may facilitate environmental assessments. **Page 20**

Template molecule that catalyzes its own reproduction is product of aminolysis reaction. **Page 24**

Ultralight silica aerogel that could capture cosmic dust particles without destroying them developed. **Page 24**

Education

New residence hall, devoted to women majoring in science and math, opens at Douglass College, a campus of Rutgers. **Page 26**

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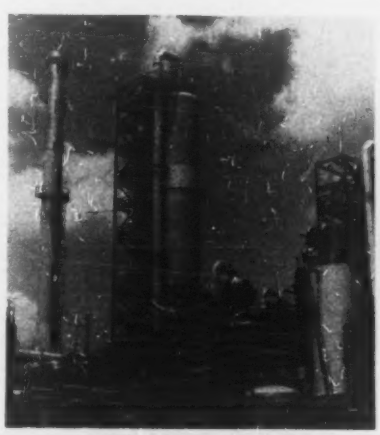

Cover Story

Earnings of major U.S. chemical firms tumbled in fourth-quarter 1989, largely because of increasing feedstock costs and slipping product prices, wiping out possible gains for the year. **Page 10**

Chemical & Engineering News

1155—16th St., N.W., Washington, D.C. 20036

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Published by
AMERICAN CHEMICAL SOCIETY
(202) 872-4600; TDD (202) 872-8733
John K Crum, Executive Director
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PUBLISHING BOARD: Jean'ne M. Shreeve *(Chairman); Board of Directors Chairman:* Joseph A. Dixon; *President:* Paul G. Gassman; and four additional members of the Society Committee on Publications yet to be appointed.

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Subscription Rates 1990. Printed editions: nonmembers U.S. 1 yr. $60, 2 yr. $108, outside U.S. 1 yr. $93, 2 yr. $174. Air freight rates available on request. Rates above do not apply to nonmember subscribers in Japan, who must enter subscription orders with Maruzen Co. Ltd., 3-10 Nihonbashi 2-chome, Chuo-ku, Tokyo 103, Japan. Tel: (03) 272-7211. Single copies: Current $9.00. Rates for back issues and volumes are available from Microforms & Back Issues Office, ACS, 1155—16th St., N.W., Washington, D.C. 20036. Back and current issues available on microfilm and microfiche. Rates on request from Microform Program, ACS.

Chemical & Engineering News (ISSN 0009-2347) is published weekly except for the last week in December by the American Chemical Society at 1155—16th St., N.W., Washington, D.C. 20036. Second-class postage paid at Washington, D.C., and additional mailing offices. POSTMASTER: Send address changes to Chemical & Engineering News, Membership & Subscription Services, P.O. Box 3337, Columbus, Ohio 43210. ACS assumes no responsibility for the statements and opinions advanced by the contributors to its publications.

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LETTERS

CHEMICAL SAFETY

Chlorosulfonic acid and heptane

SIR: John D. Baker reported (C&EN, Dec. 11, 1989, page 2) a violent reaction between chlorosulfonic acid and heptane. I believe there are four questions regarding this incident that were not reported: (1) Was the heptane wet? (2) Was the tank wet? (3) Did the heptane contain any olefinic impurities? (4) Did the tank contain any olefinic impurities?

In my research for the master's degree under the late George Holmes Richter at Rice University (1935-38), I studied the reaction between chlorosulfonic acid and 2-pentene. Contrary to expectations, this resulted in direct sulfonation, yielding a mixture of pentenesulfonic acids [*J. Am. Chem. Soc.*, **71**, 453 (1949)]. I learned quite early that chlorosulfonic reacted vigorously with water. In fact, even when disposing of unreacted acid in chloroform solution, the liquid was allowed to drip very slowly into ice water and each drop reacted with a pop and evolution of white fumes (presumably HCl, H_2SO_4 and/or SO_3, SO_2, and steam. It is well to understand that such a violent reaction would also occur with anhydrous alcohols and other oxygenates. Chlorosulfonic acid is a dangerous substance that must be handled with extreme caution.

Simon Miron
Petroleum Consultant
Lake Jackson, Tex.

Testing cosmetics

SIR: In Leland C. Clark's letter (C&EN, Jan. 8, page 3), he has resorted to indefensible logic and emotional blackmail in his support of cosmetic testing and his attack on the Animal Welfare Act. It is his opinion that since a few major cosmetic firms have stopped using animals in the testing of personal care products, the entire research community is threatened. Apparently we must defend their right to administer the Draize test to rabbits or legitimate research will surely suffer.

I, for one, do not consider such cosmetic testing as legitimate research. The Draize test, and other animal testing procedures, are performed not out of earnest scientific inquiry, but rather as a defense against anticipated litigation. In addition, the ability of these procedures, particularly the LD_{50} and the Draize test to predict human toxicity is being questioned with increased frequency. Clark's call for continued unrestricted use of the procedures does a disservice to research by undermining the impetus to develop more reliable and humane alternatives.

The Animal Welfare Act of 1966 (and as amended in 1970, 1976, and 1985), which Clark finds so distasteful, regulates the use of laboratory animals. It was originally promulgated to prevent the use of stolen pet dogs and cats for the purposes of research or experimentation. As amended, it further sets the minimum standards for the care and handling of laboratory animals. Among other things, it mandates that cages must have adequate heat, must allow for the removal of the animals' wastes, must allow the animals to comfortably stand, sit, or lie down, or otherwise move about. Other rules set similar minimum standards for feeding, ventilation, and watering. Where in here do we find the "police state mentality" he refers to?

The Institutional Animal Care and Use Committees (IACUCs), which he finds especially offensive, are another product of the 1985 amendment to the Animal Welfare Act. It stipulates that every federally funded research facility must have an active committee to oversee the use of animals in research. The IACUCs must have a veterinarian and a member of the community among its members. The sole function of the committees is to see that the regulations regarding animals are followed. They are not "given a free hand to run rough shod through research institutions."

The act and its provisions are hardly radical, and are not as cumbersome as Clark would have us believe. The act stipulates only the minimum standards that must be met, and falls far short of what most people would consider the humane treatment of animals. The regulations were borne out of an outraged citizenry over the continued, horrifying abuse of animals at the hands of a few researchers. Sadly, the regulations were needed because the research community failed to police itself.

By failing to distinguish between abusive cosmetic testing and legitimate re-

Correction

• Feb. 12, page 20: The bright line number, the number that separates reasonable from unreasonable risk, should be 10^{-4} not 10^{-6}.

Chemical Earnings, Profitability Dropped in 1989

William J. Storck,
C&EN Northeast News Bureau

Rising feedstock costs and falling product prices spelled trouble for many chemical producers in last year's fourth quarter. Earnings for major chemical companies and oil firms producing chemicals dropped from the year-earlier period, but earnings for diversified companies that produce chemicals and for pharmaceutical firms continued to increase.

For a group of 30 major chemical companies, combined earnings for the quarter fell 29% from fourth-quarter 1988 to $1.23 billion. Sales totaled $19.9 billion, about the same as in the year-earlier quarter. Profit margin (earnings as a percentage of sales) plummeted to a group average of 6.2%, down from 8.7% in fourth-quarter 1988 and down from 8.1% for the same companies in the third quarter.

Thus, chemical company earnings fell from double-digit increases in the first quarter of 1989 to double-digit declines in the fourth quarter.

Perhaps even more disturbing is that the fourth quarter, which is traditionally stronger than the third, when many companies shut down plants for maintenance, was considerably weaker this year. Sales for the fourth quarter were up less than 1% from the third quarter, but combined earnings were down almost 23%.

The decline in fourth-quarter earnings was enough to wipe out possible gains for the year. Through the third quarter, earnings for the group of 30 chemical companies were up 3% over the first nine months of 1988. But the decline in fourth-quarter earnings meant that

Chemical industry leaders for the fourth quarter . . .

Sales

Rank 1989	$ Millions	Rank 1988
1 Dow Chemical	$4264.0	1
2 Union Carbide	2085.0	2
3 Monsanto	2007.0	3
4 W. R. Grace	1719.2	4
5 American Cyanamid	1146.9	5
6 Hercules	773.4	7
7 Air Products	652.5	9
8 Ethyl	644.9	13
9 Quantum Chemical	626.7	6
10 Rohm & Haas	623.2	12

Earnings[a]

	$ Millions	Rank 1988
Dow Chemical	$427.0	1
Union Carbide	103.0	2
W. R. Grace	83.4	7
Arco Chemical	75.0	3
Ethyl	62.6	8
Monsanto	54.0	10
Air Products	49.4	5
Georgia Gulf	41.2	9
American Cyanamid	38.5	6
Nalco Chemical	32.6	15

Profitability

	Earnings as % of sales	Rank 1988
Georgia Gulf	17.0%	2
Great Lakes Chemical	13.9	1
International Flavors	12.9	7
Arco Chemical	12.4	3
Nalco Chemical	11.5	10
Loctite	11.1	9
Betz Laboratories	10.5	10
Dow Chemical	10.0	5
Ethyl	9.7	12
Vista Chemical	8.3	4

. . . and for full-year 1989

Sales

	$ Millions	Rank 1988
1 Dow Chemical	$17,600.0	1
2 Union Carbide	8,744.0	2
3 Monsanto	8,681.0	3
4 W. R. Grace	6,114.6	4
5 American Cyanamid	4,825.0	5
6 Hercules	3,091.7	7
7 Quantum Chemical	2,671.0	6
8 Arco Chemical	2,663.0	8
9 Rohm & Haas	2,660.9	9
10 Air Products	2,653.8	10

Earnings[a]

	$ Millions	Rank 1988
Dow Chemical	$2487.0	1
Monsanto	647.0	3
Union Carbide	629.0	2
Arco Chemical	405.0	4
American Cyanamid	292.0	6
W. R. Grace	256.6	12
Air Products	223.9	8
Ethyl	219.5	10
Georgia Gulf	200.0	11
Rohm & Haas	176.4	7

Profitability

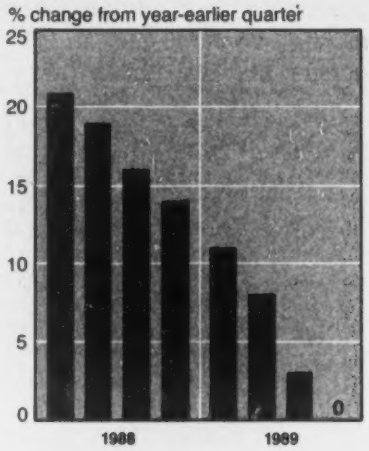
	Earnings as % of sales	Rank 1988
Georgia Gulf	18.1%	2
International Flavors	15.9	6
Great Lakes Chemical	15.5	1
Arco Chemical	15.2	2
Dow Chemical	14.1	7
Vista Chemical	13.9	4
Loctite	12.3	9
Nalco Chemical	11.2	11
Betz Laboratories	10.8	10
Ethyl	9.0	12

Note: Based on 30 chemical companies listed on page 12. a After taxes.

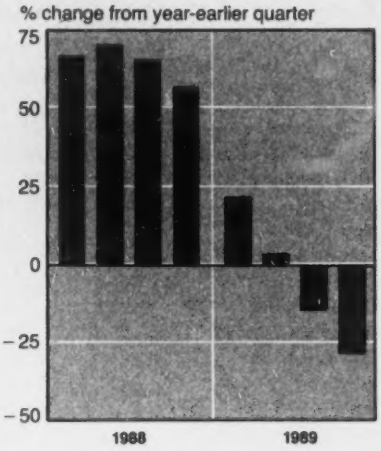
Chemical industry 1989 fourth-quarter results

- Sales were nearly flat
- Earnings dropped 29%
- Profit margins fell to 6.2%
- Production rose 3.4%
- Prices up less than 1%

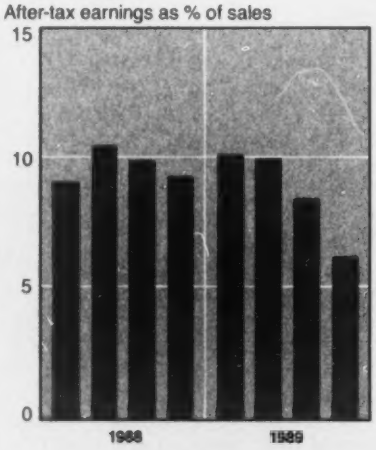
Sales



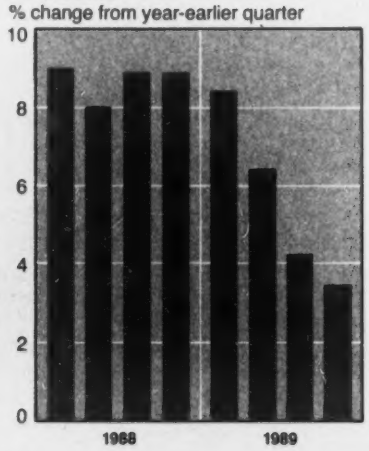
Earnings



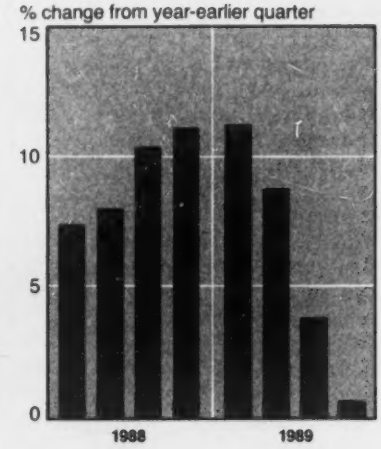
Profit margins



Production

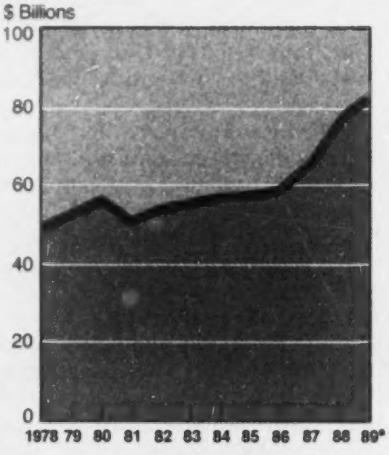


Prices

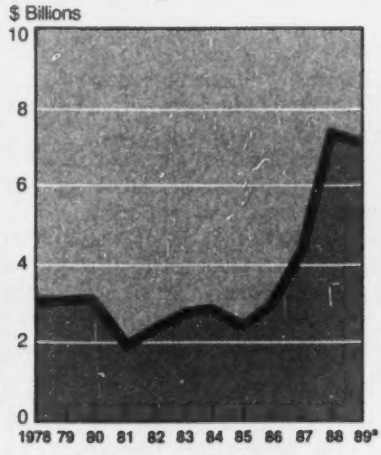


Sales in 1989 increased about 6% and earnings declined 4%, lowering profit margins to 8.7%

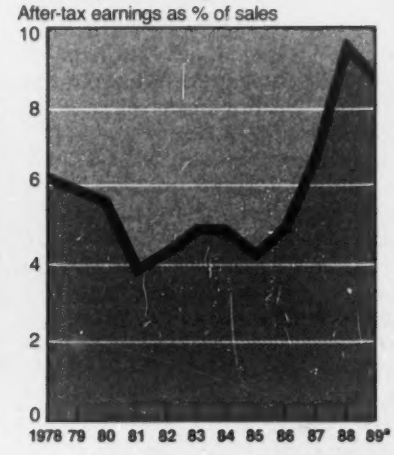
Annual sales



Annual earnings



Annual profit margins



Note: All sales, earnings, and profit margin data are based on 30 companies on page 12. a C&EN estimates.

Earnings fell at most chemical companies in the fourth quarter

	FOURTH-QUARTER 1989						FULL-YEAR 1989					
	Sales	Earnings[a]	Change from 1988		Profit margin[b]		Sales	Earnings[a]	Change from 1988		Profit margin[b]	
	($ millions)		Sales	Earnings	1989	1988	($ millions)		Sales	Earnings	1989	1988
Air Products	$ 652.5	$ 49.4	2%	−19%	7.6%	9.5%	$ 2,653.8	$ 223.9	7%	2%	8.4%	8.8%
American Cyanamid	1,146.9	38.5	4	−37	3.4	5.5	4,825.0	292.0	5	−1	6.1	6.4
Arco Chemical	606.0	75.0	−19	−44	12.4	18.0	2,663.0	405.0	−1	−18	15.2	18.3
Aristech	222.6	15.1	−14	−57	6.8	13.5	996.4	82.1	−6	−50	8.2	15.4
Betz Laboratories	128.5	13.5	12	9	10.5	10.7	516.7	55.9	15	15	10.8	10.8
Cabot	406.6	18.4	−15	−19	4.5	4.7	1,863.5	51.9	5	−16	2.8	3.5
Chemed	145.6	5.7	0	55	3.9	2.5	591.8	26.2	18	27	4.4	4.1
Crompton & Knowles	85.1	6.0	−1	44	7.1	4.9	355.8	24.5	23	45	6.9	5.8
Dow Chemical	4,264.0	427.0	−1	−33	10.0	14.8	17,600.0	2487.0	6	3	14.1	14.4
Ethyl	644.9	62.6	11	14	9.7	9.5	2,430.0	219.5	16	13	9.0	9.3
First Mississippi	131.5	1.4	36	−77	1.0	6.3	489.2	8.3	48	−67	1.7	7.6
H. B. Fuller	189.6	5.1	5	5	2.7	2.7	753.4	15.7	10	−26	2.1	3.1
Georgia Gulf	243.2	41.2	−14	−24	17.0	19.2	1,104.5	200.0	4	3	18.1	18.3
B. F. Goodrich	573.7	28.1	−4	−30	4.9	6.7	2,419.7	171.2	4	−17	7.1	8.8
W. R. Grace	1,719.2	83.4	4	50	4.8	3.4	6,114.6	256.6	6	34	4.2	3.3
Great Lakes Chemical	226.2	31.5	59	14	13.9	19.4	792.3	122.9	42	19	15.5	18.5
Hercules	773.4	−26.9	3	def	def	0.9	3,091.7	103.6	10	−14	3.4	4.3
International Flavors	188.6	24.4	4	5	12.9	12.8	869.5	138.6	4	8	15.9	15.3
International Minerals	330.1	9.8	37	−35	3.0	6.2	1,165.8	69.7	23	−11	6.0	8.3
Loctite	121.7	13.5	8	10	11.1	10.9	473.9	58.2	8	22	12.3	10.9
Lubrizol	280.6	15.9	1	−35	5.7	8.9	1,227.9	94.0	9	15	7.7	7.2
Monsanto	2,007.0	54.0	7	20	2.7	2.4	8,681.0	647.0	5	9	7.5	7.1
Nalco Chemical	283.2	32.6	8	16	11.5	10.7	1,070.8	119.9	8	13	11.2	10.7
Olin	600.0	31.0	−4	48	5.2	3.4	2,509.0	124.0	9	27	4.9	4.2
Petrolite	75.1	3.5	1	64	4.7	2.9	291.4	12.1	−3	−7	4.2	4.3
Quantum Chemical	626.7	18.1	−22	−80	2.9	11.3	2,671.0	114.1	−9	−68	4.3	12.3
Rohm & Haas	623.2	21.4	5	−49	3.4	7.1	2,660.9	176.4	5	−23	6.6	9.1
Union Carbide	2,085.0	103.0	−3	−36	4.9	7.5	8,744.0	629.0	5	−5	7.2	8.0
Vista Chemical	170.1	14.1	−11	−55	8.3	16.3	757.7	105.6	−4	−17	13.9	16.1
Witco	379.8	14.3	−1	−30	3.8	5.3	1,587.8	78.2	0	−6	4.9	5.2
TOTAL[c]	$19,930.6	$1230.6	0%	−29%	6.2%	8.7%	$81,972.0	$7113.1	6%	−4%	8.7%	9.5%

a After-tax earnings from continuing operations excluding significant nonrecurring and extraordinary items. b After-tax earnings as a percentage of sales. def = deficit.

total earnings for the year totaled $7.11 billion, down 4% from 1988. Sales for the year were still up 6% over 1988, however, to almost $82 billion. Profit margins slipped to 8.7% from 9.5% in 1988.

Lackluster end-use markets such as automobiles and housing had a negative effect on fourth-quarter earnings, according to some of the companies. Edgar S. Woolard Jr., Du Pont's chairman, noted softening in sectors of the economy important to the company. These included automotive, housing, and electronics, which, he said, depressed fourth-quarter results.

Dow Chemical cited price declines resulting from easing demand growth and increased supply in both ethylene glycol and vinyl chloride as well as softening in the North American construction market where products made from vinyl chloride are used extensively.

Export markets also had an effect on fourth-quarter earnings. Although chemical exports held up better than had been anticipated, industry sources say prices for exported products fell during the quarter. This was especially true for polymers and some large-volume inorganics.

The results of end-market forces ranged widely throughout the industry, especially in pricing. Government data show that prices of chemicals and allied products in the fourth quarter were up just 0.6% from fourth-quarter 1988. And prices were down 0.6% from the third quarter.

For the subcategory of industrial chemicals, which tend to dominate chemical company results, the price shifts were even worse. Industrial chemical prices for the fourth quarter averaged 0.6% below those a year earlier and were down 1.1% from the previous quarter.

Chemical production for the fourth quarter was still ahead, according to government figures, rising 3.4% from fourth-quarter 1988 and 1.1% from the third quarter of 1989. However, increases in capacity negated

Fourth-quarter earnings rose for drug and diversified companies, but dropped for oil firms

	FOURTH-QUARTER 1989						FULL-YEAR 1989					
	Sales ($ millions)	Earnings[a] ($ millions)	Change from 1988 Sales	Change from 1988 Earnings	Profit margin[b] 1989	Profit margin[b] 1988	Sales ($ millions)	Earnings[a] ($ millions)	Change from 1988 Sales	Change from 1988 Earnings	Profit margin[b] 1989	Profit margin[b] 1988
OIL AND GAS COMPANIES												
American Petrofina	$ 758.2	$ 13.5	12%	−59%	1.8%	4.9%	$ 3,036.4	$ 119.1	15%	−10%	3.9%	5.0%
Amoco	6,089.0	319.0	10	−15	5.2	6.8	23,973.0	1,610.0	13	−22	6.7	9.8
Ashland	2,200.0	22.0	5	−77	1.0	4.6	8,493.8	115.1	3	−56	1.4	3.2
Chevron	8,900.0	320.0	29	−27	3.6	6.4	32,800.0	1,458.0	13	−14	4.4	5.9
Exxon	26,550.0	1285.0	15	−7	4.8	6.0	96,076.0	4,655.0	8	−12	4.8	5.9
Kerr-McGee	798.9	37.2	16	11	4.7	4.9	3,087.1	156.0	15	42	5.1	4.1
Mobil	15,141.0	447.0	13	1	3.0	3.3	56,656.0	1,809.0	4	−11	3.2	3.7
Occidental Petroleum	5,049.0	30.0	−4	−42	0.6	1.0	20,068.0	256.0	3	−28	1.3	1.8
Shell Oil	5,505.0	264.0	1	25	4.8	3.9	21,948.0	1,405.0	3	13	6.4	5.8
Sun Co.	3,080.0	4.0	13	−96	0.1	3.4	11,380.0	275.0	14	−11	2.4	3.1
Texaco	9,241.0	389.0	9	−28	4.2	6.4	35,656.0	2,942.0	1	29	8.3	6.5
Unocal	2,852.0	66.0	7	−53	2.3	5.3	11,357.0	358.0	12	−3	3.2	3.6
TOTAL	$86,164.1	$3196.7	12%	−17%	3.7%	5.0%	$324,531.3	$15,158.3	7%	−6%	4.7%	5.3%
DIVERSIFIED MANUFACTURERS												
Allied-Signal	3,058.0	115.0	2	11	3.8	3.5	11,942.0	505.0	0	7	4.2	4.0
Borden	1,952.9	99.9	−2	6	5.1	4.7	7,593.4	343.8	5	10	4.5	4.3
Du Pont	8,993.0	483.0	8	−3	5.4	6.0	35,534.0	2,480.0	10	13	7.0	6.8
Eastman Kodak	4,886.0	465.0	8	49	9.5	6.9	18,398.0	1,404.0	8	1	7.6	8.2
Engelhard	626.3	14.5	−10	−25	2.3	2.8	2,403.0	82.9	2	30	3.4	2.7
FMC	822.7	32.4	−7	−10	3.9	4.1	3,414.5	156.8	4	21	4.6	3.9
Ferro Corp.	269.9	12.3	4	5	4.6	4.5	1,083.6	49.7	7	7	4.6	4.6
3M	2,954.0	292.0	7	7	9.9	9.9	11,990.0	1,244.0	6	8	10.4	10.2
NL Industries	239.4	20.6	2	−37	8.6	13.9	1,000.9	170.3	−1	27	17.0	13.3
PPG Industries	1,424.2	101.4	−1	−1	7.1	7.1	5,734.1	465.2	2	−1	8.1	8.3
Vulcan Materials	257.7	23.7	−4	−6	9.2	9.4	1,076.2	113.4	2	−17	10.5	12.9
TOTAL	$25,484.1	$1659.8	5%	10%	6.5%	6.2%	$100,169.7	$ 7,015.2	6%	8%	7.0%	6.9%
PHARMACEUTICAL COMPANIES												
A. H. Robins	1,455.4	253.0	11	14	17.4	17.0	5,379.8	859.8	9	14	16.0	15.2
American Home Products	1,640.2	304.4	7	19	18.6	16.6	6,747.0	1,102.2	5	11	16.3	15.6
Baxter International	1,961.0	139.0	7	15	7.1	6.6	7,399.0	446.0	8	15	6.0	5.7
Bristol-Myers Squibb	2,360.3	339.8	10	16	14.4	13.7	7,056.9	1,439.3	6	15	20.4	18.8
Merck	1,781.1	367.9	16	20	20.7	20.0	6,550.5	1,495.4	10	24	22.8	20.3
Pfizer	1,494.0	133.3	9	−6	8.9	10.3	5,671.5	727.3	5	−8	12.8	14.7
Rorer Group	403.5	44.7	24	66	11.1	8.3	1,182.2	86.5	13	40	7.3	5.9
Schering-Plough	776.9	111.1	5	20	14.3	12.6	3,157.9	471.3	6	21	14.9	13.1
Upjohn	727.9	80.2	4	−3	11.0	11.8	2,907.3	311.0	8	−13	10.7	13.3
Warner Lambert	1,043.4	92.3	5	19	8.8	7.8	4,195.8	412.7	7	21	9.8	8.7
TOTAL	$13,643.7	$1865.7	9%	15%	13.7%	13.0%	$ 50,247.8	$ 7,351.4	7%	12%	14.6%	14.0%

a After-tax earnings from continuing operations, excluding significant nonrecurring and extraordinary items. b After-tax earnings as a percentage of sales.

the effects of rising output. The government's measure for capacity use fell to 87.6% in the fourth quarter from 89.1% a year earlier and from 88.0% in the third quarter. The fall in capacity utilization, though still slight, helped to put pressure on prices.

One other factor that entered into the earnings picture for the fourth quarter was the unusually cold December weather along the Gulf Coast. This disrupted operations at a number of chemical plants, including those owned by Dow and Texaco.

Of the groups of companies surveyed, chemical companies (which derive 50% or more of their total sales from chemicals) showed the worst decline in fourth-quarter earnings. A group of 12 oil companies was the only other group surveyed whose earnings declined; their combined earnings dropped 17% to a total of almost $3.20 billion. Sales for this group increased 12% to $86.2 billion. Profitability for the oil companies was much worse than for chemicals, as it usually is; they registered an average profit margin of 3.7%, down from 5.0% in fourth-quarter 1988.

Petrochemicals fare poorly in fourth quarter

To get a picture of petrochemical performance, one can look at a chemical company such as Quantum Chemical, but a broader picture emerges from chemical earnings at the major oil companies, which are dominated by basic petrochemicals. And the picture in the fourth quarter is not very good.

Overall chemical earnings at eight large oil companies that report net earnings for chemicals fell an average of 48% in the quarter to about $674 million. This resulted in an 8% decline for the full year to about $4.52 billion.

Unocal, whose 88% decline in the quarter was the largest for the group, says its fourth-quarter results for chemical operations reflect higher fertilizer costs caused by temporary shortfalls of natural gas supplies and extended plant downtime for maintenance.

Texaco, which had the second largest decrease among the eight in the fourth quarter, says results were adversely affected by continuing price declines for olefins and derivative products. These declines resulted from a continuing oversupply of product in the marketplace. Plant disruption brought on by severe weather in December also reduced earnings about $15 million, the company says.

Exxon saw its earnings fall about 60% in the quarter and said that this was a result of rising feedstock costs and expanded industry production capacity.

Occidental Petroleum had the smallest decline, at 16%, which it says resulted largely from lower margins in petrochemicals, primarily reflecting lower sales prices industrywide.

EARNINGS ON CHEMICAL OPERATIONS

	Fourth quarter			Full year		
$ Millions	1989	1988	% change	1989	1988	% change
Amoco	$ 79.0	$ 145.0	−46%	$ 491.0	$ 684.0	−30%
Chevron	61.0	115.0	−47	378.0	455.0	−17
Exxon	136.0	340.0	−60	1080.0	1306.0	−17
Mobil	82.0	131.0	−37	573.0	613.0	−7
Occidental Petroleum	214.0	256.0	−16	1056.0	878.0	20
Shell Oil	84.0	103.0	−56	630.0	673.0	−6
Texaco	16.0	111.0	−86	268.0	245.0	9
Unocal	2.0	16.0	−88	49.0	51.0	−4
TOTAL	$674.0	$1307.0	−48%	$4515.0	$4905.0	−8%

Results from 11 diversified firms that produce chemicals showed an increase in earnings of 10% to $1.66 billion on a 5% sales increase to $25.5 billion. Thus the profit margin for the group increased to 6.5% from 6.2% in the fourth quarter a year earlier.

For the other group surveyed, 10 drug producers, earnings increased in the fourth quarter 15% to $1.87 billion on a sales rise of 9% to $13.6 billion. The profit margin for this group was 13.7%, up from 13.0% in the fourth quarter of 1988.

For this year, chemical producers are hoping that earnings have dropped about as far as they will go. They may be right in that 1989 third- and fourth-quarter earnings, which showed declines, were still being compared with very strong year-earlier quarters. First-quarter 1990 earnings will still be compared with a quarter that had shown a 22% year-to-year increase, but after that the comparisons will be made with quarters that were already showing signs of a slowing chemical economy.

If economists are correct in predicting the so-called soft landing for the U.S. economy instead of outright recession, the chemical industry, through 1990 at least, may well settle down to moderate sales and earnings growth. Moderation, however, will be a big change for an industry that up until the second quarter of 1989 saw earnings grow at more than 20% for 11 consecutive quarters. □

Takeda's vitamin C plant starts up

One of the largest Japanese investments in the U.S. chemical industry has begun operating with the dedication earlier this month of Takeda U.S.A.'s vitamin C plant in Wilmington, N.C.

The $90 million facility has a capacity of 11 million lb per year and boosts total domestic vitamin C capacity about 35%. Current U.S. capacity of just over 30 million lb is dominated by Hoffmann-La Roche's facility in Belvidere, N.J. The new Takeda plant will serve what the company sees as growing U.S. and Canadian markets, and its product also will replace imports of vitamin C from Japan.

At the dedication, Hirohiko Ichikawa, president of the fine chemicals division of parent company Takeda Chemical Industries of Osaka, Japan, said the new plant underscores the company's commitment to the U.S. He added: "It is an important step in our global strategy of expanding production and research capability in America, as well as Europe and Asia."

The new vitamin C unit is adjacent to a vitamin B-1 plant that Takeda U.S.A. has had in operation at its 1500-acre Wilmington site since 1985. Ichikawa said there are plans for more facilities at the site, but he was not specific about the type of plants and the timing.

Takeda Chemical Industries is Japan's largest pharmaceutical company and the seventh largest drug producer in the world. It also claims to be the world's second largest producer of bulk vitamins. In fiscal 1989 the company had total worldwide sales of $5.2 billion and R&D expenditures of $343 million.

For several years Takeda has had an R&D partnership with Abbott Laboratories to conduct clinical research in the U.S. on drugs created by Takeda. In 1989 this effort was restructured as a corporate entity under the name of TAP Pharmaceuticals. It is marketing Lupron Depot, a sustained-release preparation for the treatment of prostate cancer.

Michael Heylin

hazardous substances used there. If OSHA has a regulation for a specific carcinogen, such as for formaldehyde or ethylene oxide, the lab is obligated to follow those regulations.

The final rule gives no blanket exemption from the regulations to any kind of lab, unlike the original proposal, which exempted dental, veterinary, and group medical practice labs. OSHA has decided to redefine a lab by what it does and the volume of chemicals it uses. A lab, therefore, is a facility where the laboratory use of chemicals occurs.

Laboratory use is where chemical manipulations are done on such a scale that the chemicals can be easily carried and used by one person, where multiple chemical procedures are performed, where these procedures are not part of any production process, and where protective lab practices and equipment are in common use to prevent worker exposure to hazardous chemicals.

Other principal features of the new standard deal with employee training and medical exams. Training requirements have been beefed up relative to the proposed rule and are generally consistent with the provisions of the hazard communication standard. Employees must be trained to detect the presence or release of hazardous chemicals. They must be aware of the physical and health hazards caused by chemicals, and they must know what measures to take to protect themselves.

If an employee develops symptoms of a chemical exposure problem or if a leak or spill occurs, employers must give workers the opportunity for a medical exam. An exam is also warranted if routine surveillance shows that exposure to a hazardous chemical has gone over the action level or the permissible exposure level for that chemical.

OSHA does not yet have specific plans for enforcing the new laboratory standard. Like companies, labs probably will not have to send their chemical hygiene plans to OSHA for approval, but they will have to have them available for employee use. Neither does OSHA currently have plans for including laboratories in its scheduled inspections, but labs could be inspected in response to worker complaints about not complying with the regulation.

The complete standard, with explanations for some sections, is published in the Jan. 31 issue of the *Federal Register*, page 3300.

David Hanson

EPA seeks to amend pesticide export rules

The Environmental Protection Agency last week proposed changes to its pesticide export policies mandated under Section 17 of the Federal Insecticide, Fungicide & Rodenticide Act (FIFRA). The immediate goal of the changes, says EPA spokesman Al Heier, "is to bring our regulations more into concert with those of the United Nations and the Organization for Economic Cooperation & Development."

But the ultimate aim is to assure Americans that their imported food is untainted by exported pesticides not registered for use in the U.S. As assistant EPA administrator for pesticides and toxic substances Linda J. Fisher explains, "With these proposed changes, EPA will be more responsive to the concerns of the U.S. public that consumes imported food."

Many of the pesticides exported are not registered for use in the U.S. and, therefore, can't be sold here. However, these same pesticides may be sold to foreign countries once these recipient countries acknowledge and accept the fact that the pesticides are not registered in the U.S. But residues of these nonregistered pesticides may get back to the U.S. in imported food.

In addition to protecting the U.S. public, EPA also wants to make certain that recipient countries fully understand the U.S. status of exported pesticides. To that end, the agency proposes to amend its export policy for nonregistered pesticides. The agency also plans to clarify the labeling requirements for all pesticides—registered and nonregistered—made for export and to expand notifications to foreign governments whenever the agency takes a significant regulatory action on a pesticide.

EPA also is seeking disclosure of certain information that is now treated as confidential. It wants pesticide manufacturers to be required to divulge the final destination of their exported products. Now only the country to which a product is shipped is listed. But EPA argues that the final destination is usually publicly available information and therefore doesn't warrant confidential treatment.

Pesticide manufacturers disagree. Scott Ferguson, general counsel to the National Agricultural Chemicals Association, says the final destination may not be known to the exporting company. "In some cases the product is shipped to a warehouse or a brokerage house, from where it is subsequently distributed." Also, Ferguson says, even if the final destination is known, disclosing such information reveals important confidential marketing information to competitors.

Before exporting a pesticide not registered for use in the U.S., an exporter must obtain a signed statement from the foreign purchaser acknowledging this fact. This acknowledgment is eventually sent to the government of the importing country. EPA is proposing that these acknowledgment statements be multilingual—in English, in the language of the purchasing country, and in the language of the country

Five firms fined for unlawful pesticide exports

Dow Chemical, Midland, Mich.
Eight counts of exporting pesticides without proper labels
Assessed penalty: $22,400

Exxon Chemical Americas, Houston, Tex.
Seven counts of exporting pesticides without proper labels
Assessed penalty: $19,600

Mobay Corp., Pittsburgh, Pa.
110 counts of pesticide violations
Assessed penalty: $314,900

Rohm & Haas Bayport, LaPorte, Tex.
12 counts of pesticide export violations
Assessed penalty: $36,000

Shield-Brite Corp., Kirkland, Wash.
74 counts of pesticide export violations
Assessed penalty: $222,000

of final destination. Currently the statements are bilingual. EPA is also proposing that the label bearing the statement "Not Registered for Use in the U.S.A.," now bilingual, be multilingual.

EPA's Heier says, "EPA is trying to provide better information to the final using country. No effort is being made to prevent the exportation of U.S.-banned pesticides."

Ferguson admits the "objective of conveying necessary information to foreign governments and purchasers about risks is a good idea." But, he notes, "to have to make multiple translations is costly and difficult. And the language of international trade is English."

Currently EPA notifies foreign governments whenever a pesticide registration, cancellation, or suspension becomes effective or ceases to be effective. The agency is now proposing to expand these notifications to include other regulatory actions that affect human health and the environment. EPA also proposes to increase the frequency of these notices and to amend the transmittal process to bring these procedures into line with those adopted by the UN and OECD.

EPA's proposed amendments to Section 17 were published last week in the *Federal Register*, pages 4956 and 4967. Interested parties have 90 days to comment.

In a related matter, the agency has filed complaints against five companies for unlawfully exporting pesticides not registered for use in the U.S. The agency is assessing civil penalties totaling $614,800 against Dow Chemical Co., Exxon Chemical Americas, Mobay Corp., Rohm & Haas Bayport, and Shield-Brite Corp. Charges against these firms include exporting pesticides labeled only in English to countries in which English is not the official language, failure to obtain the foreign purchaser acknowledgment statement, and failure to label unregistered pesticides with "Not Registered for Use in the U.S.A." The firms have 20 days after receipt of the complaint to request an administrative hearing, institute an informal settlement conference, or pay the fines.

Lois Ember

Regulatory agencies' funding up in Bush's budget

Under President Bush's fiscal 1991 budget proposal, funding for the regulatory agencies that interact in one way or another with the chemical community is generally up by well over both the 3% rise slated for the government as a whole and the predicted 4% inflation rate.

For instance, the Office of Management & Budget points out that the 12% increase to $2.2 billion requested for the Environmental Protection Agency in fiscal 1991 is one of the largest requested for any government agency's operating budget.

Within that total funding for EPA, enforcement activities would rise 22% to $419 million. EPA Administrator William K. Reilly says this increase "serves notice that President Bush and EPA are committed to sustained, tough, predictable enforcement of the nation's environmental laws." The increase would allow for the addition of more compliance inspectors, attorneys, criminal investigators, and technical experts to the agency's staff. EPA says its goal is to ensure that complex civil environmental cases are litigated or settled under terms most favorable to the environment. And the agency says it will even more aggressively pursue enforcement of toxic waste cleanups by responsible parties.

According to budget documents, President Bush is expected to submit a legislative package of pollution prevention initiatives to Congress early this year. These will include a demonstration program to allow modification of existing statutory and regulatory requirements for generators of waste who can show that they can achieve greater protection of human health and the environment through pollution prevention and waste minimization efforts than through traditional approaches. EPA has allocated approximately $82 million of its fiscal 1991 operating budget for pollution prevention programs.

In addition to the operating budget, funding for the Superfund program would be up 14%, or $209 million, to $1.7 billion. That's on top of the 500 new people the agency expects to hire and the $75 million it expects to redirect to the program this year. The increase in monies for fiscal 1991 is expected to allow initiation of long-term cleanup efforts at 16 new sites. On the down side, EPA is seeking a 60% cut, to $14.2 million, in funding for nonpoint source control grants to states.

The Occupational Safety & Health Administration doesn't fare quite so well as EPA in the Administration budget proposal. Still, its funding would be up a respectable 8%, or $20.8 million, to $288 million. The increase includes $2.7 million for a targeted enforcement initiative; $3.2 million for a new integrated management information system; $4 million for ongoing redesign of the occupational safety and health statistical program; and $291,000 for the safety and health standards setting program. Funding for research by the National Institute for Occupational Safety & Health, however, is essentially frozen at $85.1 million.

On paper, funding for the Food & Drug Administration isn't just frozen, it's down 9% to $528 million. However, according to Department of Health & Human Services' budget documents, FDA funding is actually slated to increase 14%, or $84 million, to $685 million. This discrepancy can be explained in that, although FDA is asking Congress for less money, it expects to raise $157 million through the collection of user fees imposed on companies that are seeking FDA product approvals.

FDA is requesting a total of $45 million for its generic drugs program, which has been plagued by revelations that several generic drug firms have provided fraudulent drug samples for tests to establish bioequivalence with the original drug. According to FDA, the additional resources will enable it to establish a separate office of generic drugs and reexamine a substantial portion of the 2000 generic drugs approved since passage of the Generic Drug Act in 1984.

Janice Long